

REMARKS**I. General**

Claims 1-20 were pending in the current application, and such claims 1-20 are rejected in the Office Action mailed July 7, 2003. The issues raised in the Office Action mailed July 7, 2003 are:

- Claims 1, 2, 4, 6-11, 14-18, and 20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,515,181 to Iyoda et al. (hereinafter "*Iyoda*"); and
- Claims 3, 5, 12-13, and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Iyoda* in view of U.S. Patent Number 6,115,482 to Sears et al. (hereinafter "*Sears*").

Applicant respectfully traverses the outstanding rejections, and requests reconsideration and withdrawal thereof in light of the remarks contained herein.

II. Amendments**A. In the Specification**

The specification of the present application is amended to provide the Application Serial Number for the concurrently filed and commonly assigned U.S. Patent Application entitled "METHOD AND SYSTEM FOR CALIBRATING A LOOK-DOWN LINEAR ARRAY SCANNER UTILIZING A FOLDED OPTICAL PATH." The specification is also amended to correct a typographical error therein. No new matter is added by these amendments to the specification.

B. In the Claims

Claims 1-3, 5, 7, 8, and 19 are amended herein. Claims 4 and 20 are canceled without prejudice herein, and claims 21-25 are newly presented herein. No new matter is added by these claim amendments and additions.

More specifically, the preamble of independent claim 1 is amended to recite a "method of digital imaging utilizing a look-down digital imaging ~~device~~, device to form a

resulting high-resolution digital image.” (deleted portions shown as strikethrough and added portions shown underlined). Independent claim 1 is further amended to recite “sweeping an image raster line once across ~~at least a portion of~~ said target scan area, ~~to capture a~~ thereby capturing said resulting high-resolution digital image of an original object. ~~image within said target scan area.~~” (deleted portions shown as strikethrough and added portions shown underlined).

Dependent claims 2-3 and 7-8 are amended solely for proper antecedent basis in view of the above amendments to claim 1. Dependent claim 4 has been canceled without prejudice herein as its limitation of capturing high resolution image data has been substantially included in independent claim 1, as amended herein. Accordingly, dependent claim 5 is amended to change its dependency from claim 4 to independent claim 1. Further, dependent claim 19 is amended to depend from claim 18, rather than from claim 17, to ensure that proper antecedent basis is present for the recited “said high resolution”.

III. Claim Rejections Under 35 U.S.C. § 102(b) over *Iyoda*

Claims 1, 2, 4, 6-11, 14-18, and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Iyoda*. To anticipate a claim under 35 U.S.C. § 102, a single reference must teach every element of the claim, *see* M.P.E.P. § 2131. In view of the comments below, Applicant respectfully traverses this rejection because the *Iyoda* reference fails to teach every element of the rejected claims.

Independent claim 1, as amended herein, recites, in part, “sweeping an image raster line once across said target scan area, thereby capturing said resulting high-resolution digital image of an original object.” Independent claim 10 recites, in part, “linear sensor for imaging a raster line of an original image placed substantially below said look-down digital imaging device”. And, independent claim 17 recites “a look-down digital imaging device that includes means for imaging a raster line over a target scan area and means for focusing reflected light from said target scan area to said imaging means.” As discussed further below, *Iyoda* fails to teach at least the above elements of independent claims 1, 10, and 17.

A. Brief Discussion of *Iyoda*

Iyoda teaches using an image reading apparatus, such as that shown in FIGURE 10 thereof to read an original image. "More specifically, the solid-state imaging device 15 is adjusted in direction by the gyro mechanism in the scan mechanism unit 1 so that the whole image on the original 103A can be read, and the reading (prescan) of the whole image is performed as a first reading process." Col. 4, lines 53-57. The image information is "corrected by a dark offset correction circuit 32b and a shading correction circuit 32c." Col. 4, line 67 - col. 5, line 1.

"The corrected information is transmitted to the image processing unit 34". Col. 5, lines 1-2. In the image processing unit 34, the image processing for the whole image is performed in accordance with the procedure shown in the flowchart of FIG. 2." Col. 5, lines 16-18. The image is processed using a Laplacian transform to detect edges in the image. Col. 5, line 19 - col. 6, line 2. "After completing the reading process for the whole image, a reading process (partial scan) is performed as the second reading process by the image reading portion 32 shown in FIG. 1 on areas which are obtained by dividing the original into a plurality of sections." Col. 6, lines 3-7. "In the reading process for the sectional or division images, the magnification and the focal point are adjusted so that a reading area 103b (the position $(x(o_i), y(o_i))$ where the division image, or sectional portion of the whole image, is intended to be read) is larger by Δx and Δy than a division image 103a of the original 103A which is to be read in a division manner using the horizontal and vertical scan mechanisms (FIG. 6)." Col. 6, lines 10-16. The captured division images are processed in the manner of FIG. 2, and the whole image is acquired by connecting the division images. Col. 6, line 17 - Col. 7, line 20.

"According to the image reading apparatus of this embodiment, the process is performed with multiple resolutions. Namely, both the division images of the original 103A and the whole image are read. Coarse registration of the whole image and the division images is performed. Then, based on the coarse positions, the precise positions of the division images are obtained." Col. 7, lines 21-27. Accordingly, a coarse-resolution image(s) is captured, then further images are captured and are processed using a stitching algorithm to result in a higher-resolution image.

B. Independent claim 1

As mentioned above, claim 1, as amended herein, recites in part “sweeping an image raster line once across said target scan area, thereby capturing said resulting high-resolution digital image of an original object” (emphasis added). As described above, *Iyoda* fails to teach this element of claim 1, but rather teaches an image capture technique that involves capturing multiple images. That is, both the whole image (pre-scan) and the division images of the original 103A are captured in *Iyoda*. See e.g., Col. 7, lines 21-27. Without conceding that *Iyoda* teaches sweeping an image raster line at all (e.g., *Iyoda* fails to teach a linear sensor, as discussed further below with claims 10 and 17), *Iyoda* certainly fails to teach sweeping an image raster line once to capture a resulting high-resolution digital image. Rather, to the extent that *Iyoda* teaches sweeping an image raster line at all, it proposes doing so multiple times to capture the multiple images that are then processed to form the resulting digital image. That is, in order to capture a high-resolution digital image, *Iyoda* proposes a technique through which a plurality of images are captured and processed using a stitching algorithm. *Iyoda* does not teach sweeping an image raster line once across the target scan area, thereby capturing a resulting high-resolution digital image of an original object. Thus, *Iyoda* fails to teach all of the elements of independent claim 1, and thus fails to anticipate claim 1 under 35 U.S.C. § 102(b).

C. Independent claim 10

Independent claim 10 recites, in part, “linear sensor for imaging a raster line of an original image placed substantially below said look-down digital imaging device” (emphasis added). *Iyoda* fails to teach utilizing such a linear sensor. Instead, as described in the current application (see page 11, lines 11-18 of the current application), *Iyoda* teaches using an area array sensor for capturing images. Such area array sensors generally include photosites that are arranged in a rectangular pattern, and each exposure captures an “area” of the original, rather than a line. In describing its sensor, *Iyoda* only describes use of area array sensors, and thus fails to teach using a linear sensor. For instance, *Iyoda* teaches at column 4, lines 24-28: “The solid-state imaging device 15 consists, for example, of a CCD two-dimensional image sensor, an MOS two-dimensional image sensor, a bipolar two-dimensional image sensor, an amorphous silicon TFT two-dimensional image sensor, or the like.” All such proposed sensors are area array sensors.

In view of the above, *Iyoda* fails to teach all of the elements of independent claim 10. Accordingly, *Iyoda* fails to anticipate claim 10 under 35 U.S.C. § 102(b).

D. Independent claim 17

Independent claim 17 recites “a look-down digital imaging device that includes means for imaging a raster line over a target scan area and means for focusing reflected light from said target scan area to said imaging means.” *Iyoda* fails to teach a means for imaging a raster line over a target scan area. As discussed above with regard to claim 10, *Iyoda* only identifies area array sensors that are used for imaging a target area. As described in the current application (*see* page 10, line 27 – page 11, line 10), with a linear sensor, “each ‘exposure’ captures a line across the original, which is typically referred to as a ‘raster line.’” Because *Iyoda* fails to teach use of a linear sensor for its imaging operations, but instead teaches using an area array sensor, it fails to teach sweeping an image raster line across at least a portion of said target scan area. That is, because *Iyoda* only teaches using area array sensors, it fails to teach a means for imaging a raster line over a target scan area, as recited by independent claim 17.

In view of the above, *Iyoda* fails to teach all of the elements of independent claim 10. Accordingly, *Iyoda* fails to anticipate claim 10 under 35 U.S.C. § 102(b).

E. Newly Added Independent Claim 22

Newly added independent claim 22 recites, in part, “a look-down digital imaging device that includes a linear sensor, wherein said look-down digital imaging device is operable to sweep a raster line across a target area of an original object placed substantially below said look-down digital imaging device to capture an image of said target area by said linear sensor” (emphasis added). As described above, *Iyoda* fails to teach a look-down digital imaging device that includes a linear sensor.

Further, newly added independent claim 22 recites “a digital video camera for capturing video data of said target area”. *Iyoda* fails to teach such a digital video camera that captures video data of a target area to be imaged by a look-down digital imaging device.

In view of the above, *Iyoda* fails to anticipate newly added claim 22 under 35 U.S.C. § 102(b).

F. Dependent claims 2, 4, 6-9, 11, 14-16, 18, 21, and 23-25

Dependent claims 2, 4, 6-9, 11, 14-16, 18, 21, and 23-25 depend either directly or indirectly from one of base claims 1, 10, 17, and 22, and thus inherit all limitations of their respective base claims. It is respectfully submitted that these dependent claims are allowable not only because of their dependency from their respective independent claims for the reasons discussed above, but also in view of their novel claim features (which both narrow the scope of the particular claims and compel a broader interpretation of the base claims from which they depend). For instance, newly added dependent claim 21 depends from independent claim 17 and recites “wherein said means for imaging a raster line over said target scan area sweeps said raster line once over said target scan area for capturing a final image of an original object at a desired resolution” (emphasis added). *Iyoda* fails to teach this further limitation of dependent claim 21.

IV. Claim Rejections Under 35 U.S.C. § 103(a) over *Iyoda* in view of *Sears*

Claims 3, 5, 12-13, and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Iyoda* in view *Sears*. Dependent claims 3, 5, 12-13, and 19 depend either directly or indirectly from one of base claims 1, 10, and 17, and thus inherit all limitations of their respective base claims. It is respectfully submitted that these dependent claims are allowable not only because of their dependency from their respective independent claims for the reasons discussed above, but also in view of their novel claim features (which both narrow the scope of the particular claims and compel a broader interpretation of the base claims from which they depend).

V. Conclusion

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Please charge any fees due in this matter to Deposit Account No. 08-2025, under Order No. 10001080-1 from which the undersigned is authorized to draw.

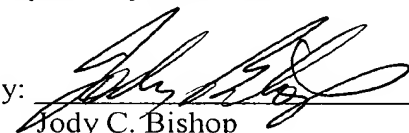
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